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APPLICATION FOR UTILITY MODEL

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71. Applicant/s: Sara Lee/ D.E. España S.A.
Carretera Real, 141-143
Saint Just Desvern, Barcelona, Spain

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72. Inventor/s: Güell Pérez, Francisco and
Boheca Toha, Damián

74. Agent: Curell Suñol, Marcelino

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DESCRIPTION

Improved apparatus for evaporation of volatile products.

The present invention relates to an improved apparatus for the evaporation of volatile products, specifically an apparatus comprised of a rigid casing equipped with air inlet and outlet slots and that houses a receptacle with a wick for disseminating the corresponding liquid insecticide, air freshener, or similar product, and an electrical heating element to produce evaporation of this product, as well as a support for electrical connection plugs to a fixed plug-in base.

The object of the invention is to equip the above apparatus with a device for controlling the retention or release of the volatile liquid product from the receptacle by choice, so that release cannot accidentally occur, but instead, only by the proper operation, with the particularity that said operation involves a component forming part of the apparatus, i.e., without incorporating another accessory for this purpose.

Said apparatus is characterized by having the receptacle for the volatile liquid product, attached inside the casing equipped with a means of installing said receptacle, connected to a support for the electrical connection plugs so that this support can control the release or retention from the receptacle as desired, based on the position imparted to the support.

According to the invention, the relation between the receptacle for the volatile liquid product and the support for the connection plugs, connected around the casing, depends on an eccentric nipple located on a disk on the rotating support assembly on the casing of the apparatus, facing the receptacle, and two aligned projections in the same plane on the face adjacent to this receptacle with respect to said disk, so that when the plugs are in the horizontal or vertical operating position the above projections will strike the nipple, blocking the receptacle, and when they are in an intermediate diagonal position said nipple will remain between the two projections thus allowing the receptacle to pass.

According to the invention, the height of the receptacle for the volatile liquid product, held by friction between axial partitions in the casing, can be gradually adjusted so as to move it closer to or further from the wick and the heating element.

According to the invention, the receptacle for the volatile liquid product has a projecting vertical rib, equipped with antiskid bumps, attached to a slot in the casing to facilitate up and down manual movement.

According to the invention, the vertical rib extending from the receptacle for the volatile liquid product is transparent so as to render the level of said liquid visible.

According to the invention, the casing has an open base thereby comprising an opening for admitting outside air that is then expelled, passing through the slots in the upper part.

According to the invention, the upper part of the casing is an outwardly extending cap that keeps the body from assuming a horizontal position upon turning over and spilling the liquid product.

According to the invention, the heating element is in the shape of a ring whose circumference is secured by radial partitions in an axial direction, emerging from the upper part of the casing.

A brief description of the drawings that illustrate the present invention:

Figure 1 is a front elevation of the apparatus that is the object of the invention.

Figure 2 is a side elevation of the same apparatus, with a cutaway view of the area with the movable retention device of the receptacle for the volatile liquid product.

Figure 3 is a plane view of the bottom of this same apparatus.

Figure 4 is a perspective view of the receptacle for the volatile liquid product.

Figure 5 is a perspective view representing in separate embodiments the receptacle for the volatile liquid product and the support for the electrical connection plugs for the apparatus.

Figure 6 is a schematic representation of the three relative positions between the support nipple for the plugs and the projections on the receptacle for the volatile liquid product, by which the receptacle is held or released.

The present evaporator apparatus, in a conventional embodiment, is comprised of a rigid casing 1 that houses a receptacle 2 for a volatile liquid product, and which is equipped with a support 3 for electrical connection plugs 4.

In one embodiment, the casing 1 consists of a column 5 with an open base 6 for admitting air, and with slots 6a for expelling air, and an upper projection 7 with slots 8 also as an outlet for air along with fumes produced by the corresponding volatile liquid product. In the

same casing 1 there is an electrical heating element 9 that causes said evaporation of the liquid product, which it contacts by means of a porous plastic wick 10 for the receptacle 2, according to Figures 1 and 2.

The support 3 for the connection plugs 4 is attached in a rotary fashion to the casing 1, for which it has a disk 11 with an edge 12 that fits into an outlet opened on the column 5, which also has a handle 14 to which the plugs 4 are attached and allows for manual operation by turning to the proper positions that are normally in a vertical and horizontal plane for said plugs 4 so that they can be inserted into a base with a fixed plug. Moreover, said disk 11 is equipped with an eccentric nipple 15 that faces the receptacle 2 inside the apparatus, and a notch 16 and stop 16a as a limiter for the two positions of the electrical connection plugs 4, as illustrated in Figure 5.

On the side face of the receptacle 2 there is a support 3, two projections aligned in the same plane 17, and a grooved rib 18 that facilitates its being held by pressure to move it manually, for which it emerges through a vertical notch in the casing 1.

Figure 6 is a schematic layout of how the nipple 15 of the support 8 operates with regard to the projections 17 of the receptacle 2. Thus, in positions A and B, corresponding to the horizontal and vertical orientation, respectfully, of the plugs 4, the nipple 15 remains placed so that it intercepts the projections 17, which keeps the receptacle 2 from moving if desired. When at rest, position C, the nipple 15 clears the passage for the projections 17, i.e., allowing movement of the receptacle 2 so that it can be inserted or removed, for replacement or filling with the volatile liquid product.

Consequently, the support 3 is designed for rotating a maximum of 90° so as to reach the horizontal or vertical position of the plane containing the plugs 4, as required in each instance for attachment to the fixed plug base, for holding the receptacle 2 in an operating position. For both positions in which the apparatus is assembled, there is an intermediate diagonal position, corresponding to the aforementioned position C, whereby the receptacle 2 can be moved at will.

As illustrated in Figures 1 to 3, the receptacle is housed at the bottom or column 5 of the casing 1, held by friction between axial partitions 19 that allow for an up and down movement manually, with regard to level H of Figure 1, by means of the grooved rib 18 that

fits in a slot 20 on the body 1. Accordingly, in each instance the desired distance between the wick 10 and the heating element 9 can be obtained, and consequently the desired amount of evaporation of the liquid contained in the receptacle 2. Said partitions 19 may have graduated positioning bumps.

The aforementioned heating element 9 is in the shape of a ring, and as shown in Figure 1, it is held by contact with inner radial partitions 21 of the cap 7, axially oriented.

Another particularity of the casing is that the cap 7 is wider than the lower part or column 5, whose purpose is, should the apparatus turn over, to keep it from reaching the horizontal position, being prevented from doing so by support angle A, to avoid spilling the liquid in the receptacle 2.

This apparatus is designed for use with insecticides, perfume, air fresheners and any other evaporatable liquid product. In short, it offers the following advantages in comparison to other known apparatuses:

- a) Direct coupling to an electrical wall plug, with no need for a flexible connector, and ease of adaptation to a plug with a vertical or horizontal outlet.
- b) The exchangeable receptacle forms part of the casing, thus requiring no additional parts.
- c) Air circulation is enhanced by having no lower blocking cap, thus increasing air flow.
- d) Regulation of the degree of evaporation by moving the receptacle up or down at will.
- e) Direct view of the level of the liquid in the exchangeable receptacle.
- f) Upper side slots in the casing, for uniform and active discharge of the fumes into the surrounding space.
- g) A heating element held in place by axial fins, to prevent overheating the casing.
- h) A porous wick that allows for a more effective evaporation of the liquid product.
- i) A safety feature of the apparatus whereby the liquid product does not spill upon turning over.
- j) Shielded interior electrical conductors.
- k) A casing in the shape of a monobloc so that it cannot be opened.

- l) An interior pressure control system for the receptacle that allows air to enter and exit, though not the liquid.
- m) No danger from mishandling, especially by children.

CLAIMS

1. Improved apparatus for the evaporation of volatile products, of a type comprised of a rigid casing equipped with air inlet and outlet slots and that houses a receptacle with a wick for disseminating the corresponding liquid insecticide, air freshener, or similar product, and an electrical heating element to produce evaporation of this product, as well as a support for electrical connection plugs to a fixed plug-in base, wherein the receptacle for the volatile liquid product, attached inside the casing equipped with a means of installing said receptacle, is connected to a support for the electrical connection plugs coupled in a rotary fashion in the receptacle.

2. The improved apparatus for the evaporation of volatile products of claim 1 wherein the relation between the receptacle for the volatile liquid product and the support for the connection plugs, connected around the casing, depends on an eccentric nipple located on a disk on the rotating support assembly on the casing of the apparatus, facing the receptacle, and two aligned projections in the same plane on the face adjacent to this receptacle with respect to said disk, so that when the plugs are in the horizontal or vertical operating position the above projections will strike the nipple, blocking the receptacle, and when they are in an intermediate diagonal position said nipple will remain between the two projections thus allowing the receptacle to pass.

3. The improved apparatus for the evaporation of volatile products of claim 1 wherein the height of the receptacle for the volatile liquid product, held by friction between axial partitions in the casing, can be gradually adjusted so as to move it closer to or further from the wick and the heating element.

4. The improved apparatus for the evaporation of volatile products of claims 1 and 3 wherein there is a projecting vertical rib, equipped with antiskid bumps, attached to a slot in the casing to facilitate up and down manual movement.

5. The improved apparatus for the evaporation of volatile products of claims 1, 3 and 4 wherein the vertical rib extending from the receptacle for the volatile liquid product is transparent so as to render the level of said liquid visible.

6. The improved apparatus for the evaporation of volatile products of claim 1 wherein the casing has an open base thereby comprising an opening for admitting outside air that is then expelled, passing through the slots in the upper part.

7. The improved apparatus for the evaporation of volatile products of claim 1 wherein the upper part of the casing is an outwardly extending cap that keeps the body from assuming a horizontal position upon turning over and spilling the liquid product.

8. The improved apparatus for the evaporation of volatile products of claim 1 wherein the heating element is in the shape of a ring whose circumference is secured by radial partitions in an axial direction, emerging from the upper part of the casing.

[see original for figures 1-6]